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Tau Neutrino Appearance with 8 years of IceCube Neutrino Data

Of all three known flavors of neutrinos, the tau neutrino is undeniably the most difficult to identify experimentally. Because of this, the values of neutrino oscillation parameters related to the third generation of neutrinos remain poorly constrained, especially when unitarity assumptions are abandoned. One way to improve these constraints consists of measuring the appearance of tau neutrinos as a statistical excess of events in a large neutrino dataset. The IceCube Neutrino Observatory is a gigaton neutrino detector buried 2000 m under the ice sheet at the South Pole. Its inner section, called DeepCore, constitutes a \sim megaton fiducial volume of more densely instrumented ice, making it sensitive to the atmospheric neutrino flux down to energies of ~ 5 GeV, where muon neutrinos are known to oscillate into tau neutrinos. I present an analysis aimed at measuring the atmospheric tau neutrino appearance in IceCube-DeepCore, using 8 years of detector data.

Mini-abstract

Performing a tau neutrino appearance analysis with IceCube-DeepCore

Experiment/Collaboration

IceCube

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